



#9
BA 7/28/03

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT: Tadakuni NARABU

APPLICATION No.: 09/283,233

Group Art Unit: 2612

FILING DATE: April 1, 1999

Examiner: Jacqueline Wilson

TITLE: IMAGE INPUT DEVICE

RECEIVED

JUL 18 2003

Technology Center 2600

Hon. Commissioner of Patents and Trademarks,
Washington, D.C. 20231

SIR:

CERTIFIED TRANSLATION

I, Hiroaki Horai, am an official translator of the Japanese language into the English language and I hereby certify that the attached comprises an accurate translation into English of the Invention's Report, submitted on February 11, 1998.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Signed this on the 23rd day of June, 2003

Hiroaki Horai

INVENTION REPORT (1)

SONY

As to a duplicate for an inventor, please make a copy by yourself and keep it.

To Intellectual Property Department

Date of Submission: February 11, 1998

Please fill in correctly.

Revised August 1997

Title of Invention: LINEAR SENSOR CAMERA

Summary of Invention: (Summarize within 130 words)

An apparatus which has, as basic construction materials, a linear sensor and a polygonal pillar to whose surface, mirror finish was applied, and which outputs a two-dimensional image as an electric signal by rotating this polygonal pillar. Or, an apparatus which has a linear sensor and a mirror as basic construction materials, and which outputs a two-dimensional image as an electric signal by rotating the mirror in a state that a plurality of flashes were made to emit light successively.

S Designation (see, backside)

☐ Yes ☒ NO

Name of Person in charge of Intellectual Property Department.

Ref. No. _____

An inventor means a person who substantially contributes to an invention. In case that another person than an employee of our company is included and in case that a joint application with other company is carried out, please described so correctly. In case of the joint application, please also attach a request for studying a joint application hereto without fail.

TEC Formal Appellation of Affiliate Company	Company Name of Department and Section Belonged (Outside Line Telephone Number) (Extension) (FAX)	Employee Number or Affiliate Company N Number (6 digits) E-mail Address	Roman Character Name (please use a word processor or a rubber stamp)	o for Person who prepared
ATSUGI TEC	SC.CCD Product Department (9-421)(5468)(6429)	36082 narabu@saccd.semicon	Roman Character NARABU TADAKUNI Head Inventor Takakuni Narabu	o
	(-) () ()			
	(-) () ()			
	(-) () ()			

Project Name:

Product Number:

Model Name/Development Type Name:

Software Related Invention ☐ Yes ☐ No

Category Classification (See, backside)

State of Development	Publicity Schedule
<input checked="" type="checkbox"/> Idea Stage	<input type="checkbox"/> Yes <input type="checkbox"/> No
<input type="checkbox"/> Development/Trial	Scheduled Date
<input type="checkbox"/> Production Stage	199 year Month Day
<input type="checkbox"/> Product	Exhibition/Put on
Commercialization	Sale/Announcement/Pla
Stage	cement of
	Order/Shipment
	Other()

Relevant Invention Report. Thesis

(No.:)
(No.:)
(No.:)

Name of Thesis

Prior Art Search

☐ Searched ☒ Not yet Searched
☐ IP-WORLD ☐ SIP SEARCH
☐ PATOLIS
Study Result (Name of Literature
Document, KW etc., in case of
inadequacy, use Attachment)

☐ Attached

After the above-described items and content of the invention are confirmed, please write evaluation of the invention and a basis thereof etc. in detail to the greatest extent possible.

Proj Leader	Chief Manager	Evaluation (Supervisor should fill in)	Foreign Application Desired	Industrial Design Application Desired	Chief General Manager	Patent Representative	Intellectual Property Promotion Responsible Person
	SCC.CCD System February 11, 1998 NARABU	<input checked="" type="checkbox"/> Special Processing (NS) <input type="checkbox"/> Regular Processing (NR) <input type="checkbox"/> Technology Publication Available (NQ) Please evaluate a case with S Designation NO.	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Unknown	SC.CCD System CCD Product General Manager February 12, 1998 (TOMO) SUZUKI	SC.CCD System February 12, 1998 HARADA	
			We wish a person of a supervisor to fill in.				

Opinion Fill-in Column: A filing until February 25 is desired.

Patent Promotion Plan PJ Code
199 - PJ

Team in Charge	Person in Charge	Final Determination	Description	Invention	Receipt Number	Person who received
	Intellectual Property. Material. Semiconductor February 16, 1998 ARAI		1 2 3 4	1 2 3 4	98002353	Intellectual Property. ATSUGU 1 February 17, 1998 Administration

Intellectual Property Memo Column

INVENTION REPORT (2)

POINTS OF INVENTION

This is a portion which becomes a column of **SCOPE OF PATENT REQUESTED (CLAIM)** in an application specification. When there are a plurality of points of the invention (claims), please write all of them by adding items of 1, 2, 3, ...

1. An image input apparatus for a still picture or a motion picture or both, which has, as basic construction materials, a linear sensor and a polygonal pillar to whose surface, mirror finish is applied, and which outputs a two-dimensional image as an electric signal by rotating this polygonal pillar.
2. An image input apparatus for a still picture or a motion picture or both, which has, as basic construction materials, a linear sensor and a mirror, and which outputs a two-dimensional image as an electric signal by rotating this mirror.
3. An image input apparatus in which an expandable tetrapod is mounted to a camera housing of a structure described above, and which has a so-called scanner function for converting information of an object of shooting such as a manuscript, a photograph and so on into electric signals, and which is easily portable.
4. An image input apparatus in which an expandable tetrapod is mounted to a camera housing of a structure described above, and which has a so-called scanner function for converting information of an object of shooting such as a manuscript, a photograph and so on into electric signals, and which is easily portable.
5. An image input apparatus which has both functions as the above-described image input apparatus for the still picture or the motion picture or both and as the above-described portable type scanner.
6. In the above-described respective image input apparatus, an image input apparatus which has, as recording medium of the electric signals, a semiconductor memory, a floppy disc, an MO disc, a magnetic tape, a compact disc and so on.
7. In the above-described respective image input apparatus, an image input apparatus which has, as a communication interface of the electric signals, RS232C, 1394, USB, IRDA, portable telephone functions, or, a bi-directional or mono-directional communication means of an original standard.
8. In the above-described respective image input apparatus, an apparatus which uses, as an image input element, a semiconductor image input element such as a CCD sensor, a MOS sensor and so on.
9. In the above-described respective image input apparatus, an apparatus to which, it becomes possible to mount or add at least one and more illumination device such as an electronic flash, and in which, it becomes impossible to input a sharp image even under a circumstance of the object of shooting for which, amount of light is not adequate.
10. In the above-described image input apparatus to which, it becomes possible to mount or add a plurality of illumination devices such as electronic flashes, an apparatus in which, during a period that an image of an target is being inputted, a plurality of the illumination devices are turned on sequentially, and uniformity of images is improved.

PRIOR ART AND ITS PROBLEMS

This is a portion which becomes a column of **PRIOR ART** in an application specification. Please write prior art and its defects with reference to a patent gazette, a literature document and so on, to the greatest extent possible.

As a two-dimensional image input apparatus which uses a linear sensor, there are roughly two kinds. One is an image scanner which is currently in widespread use, and the other is one in which, a linear sensor is disposed on a film surface of a silver salt camera which uses a middle-sized or large-sized film, and which obtains a two-dimensional image by moving this linear sensor (here, called as "linear sensor scan camera").

It is possible for any of them to obtain the two-dimensional image of super high resolution, as compared to a two-dimensional image input apparatus which uses an area sensor but, in the meantime, the former image scanner is of one wherein a physical relationship of the object of shooting and the image scanner is of almost fixed one, and there is no degree of freedom as to a distance of the object of shooting and the image scanner, and also, the latter "linear sensor scan camera" has such drawbacks that, since mechanical accuracy for moving the linear sensor is rigid, and also, speed for having the linear sensor moved is slow, cost becomes expensive, and it takes time to input a two-dimensional image.

Accordingly, in any system, it is not easy to have a three-dimensional space converted into a two-dimensional image, by using the linear sensor.

Furthermore, it was practically difficult to obtain two-dimensional motion picture, by using the linear sensor.

CONCRETE EXPLANATION OF INVENTION

This is a portion which becomes a column of **EMBODIMENT** in an application specification. Please explain in detail in accordance with the following procedures.

1. Please write an embodiment (an entirety of an apparatus, a system and a substantial part thereof, in which the invention is used) which you believe is the best, in order to realize this invention.
2. Please write a structure, an operation, an action of a substantial part of the invention in detail to the greatest extent possible.
3. Please write an modified example of the invention as many as possible.

Note 1: Please write a figure, a graph, a flow chart and so on by listing reference numerals on an attached slip, and please write explanations by citing the reference numerals.

Note 2: In case that there is a technical report and so on, please utilize it positively as the supplience of the explanations.

1. An image input apparatus for a still picture or a motion picture or both, which has, as basic construction materials, a linear sensor and a polygonal pillar to whose surface, mirror finish is applied, and which outputs a two-dimensional image as an electric signal by rotating this polygonal pillar.
See, Fig.-1.
2. An image input apparatus for a still picture or a motion picture or both, which has, as basic construction materials, a linear sensor and a mirror, and which outputs a two-dimensional image as an electric signal by rotating this mirror.
See, Fig.-2.
3. An image input apparatus in which an expandable tetrapod is mounted to a camera housing of a structure described above, and which has a so-called scanner function for converting information of an object of shooting such as a manuscript, a photograph and so on into electric signals, and which is easily portable.
See, Fig.-3.
4. An image input apparatus in which an expandable tetrapod is mounted to a camera housing of a structure described above, and which has a so-called scanner function for converting information of an object of shooting such as a manuscript, a photograph and so on into electric signals, and which is easily portable.
See, Fig.-4.
5. An image input apparatus which has both functions as the above-described image input apparatus for the still picture or the motion picture or both and as the above-described portable type scanner.
See, Fig.-5.
6. In the above-described respective image input apparatus, an image input apparatus which has, as recording medium of the electric signals, a semiconductor memory, a floppy disc, an MO disc, a magnetic tape, a compact disc and so on.
See, Fig.-6.
7. In the above-described respective image input apparatus, an image input apparatus which has, as a communication interface of the electric signals, RS232C, 1394, USB, IRDA, portable telephone functions, or, a bi-directional or mono-directional communication means of an original standard.
See, Fig.-7.
8. In the above-described respective image input apparatus, an apparatus which uses, as an image input element, a semiconductor image input element such as a CCD sensor, a MOS sensor and so on.
A black and white sensor are included.
A system for colorizing a black and white sensor by an external color filter is included.
The color sensor includes, a three line color linear sensor, a point sequential type color linear sensor, a multi-line, color linear sensor, a TDI system linear sensor and so on.
See, Fig.-8.
9. In the above-described respective image input apparatus, an apparatus to which, it becomes possible to mount or add at least one and more illumination device such as an electronic flash, and in which, it became impossible to input a sharp image even under a circumstance of the object of shooting for which, amount of light is not adequate.
See, Fig.-9.

INVENTION REPORT (4)

CONCRETE EXPLANATION OF INVENTION

(continued)

10. In the above-described image input apparatus to which, it becomes possible to mount or add a plurality of illumination devices such as electronic flashes, an apparatus in which, during a period that an image of an target is being inputted, a plurality of the illumination devices are turned on sequentially, and uniformity of images is improved.
See, Fig.10.
11. An image input apparatus which uses a polygonal pillar, a mirror surface of a rotation polygonal pillar for optical correction having been made to be of a curved surface shape but not of a plane surface.
12. An image input apparatus which uses a polygonal pillar, a mirror surface of a rotation polygonal pillar having been made to be of a plane surface without change for cost preference.
13. An image input apparatus to which, an optical or an electrical hand vibration correction for correcting hand vibration is added.
(Of course, including one which has no hand vibration correction function)

ADVANTAGE OF INVENTION

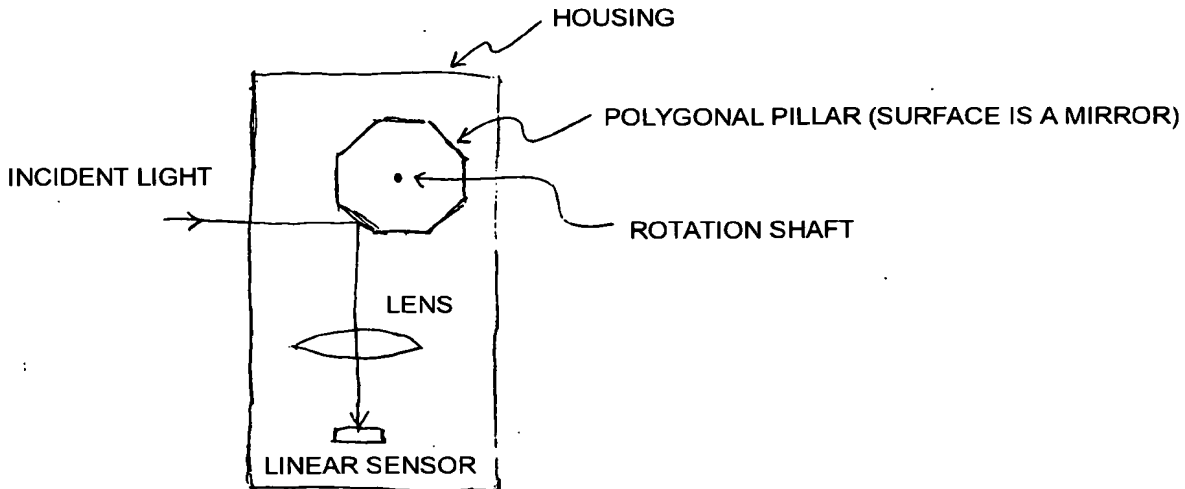
This is a portion which becomes a column of **ADVANTAGE OF THE INVENTION** in an application specification. Please write an advantage of the invention which is projected as many as possible.

1. A two-dimensional image with much lower cost than and an equal image quality to those of a two-dimensional image input apparatus which uses an area sensor (so-called digital camera) can be obtained.
2. If manufactured with similar cost to a digital camera which uses an area sensor, it is possible to obtain an image of much higher resolution.
3. By using a linear sensor, a two-dimensional image can be obtained with lower cost than that of the conventional "linear sensor scan camera".
4. A gentle positional accuracy of a linear sensor is enough, as compared to the conventional system.
5. A housing of an image input apparatus becomes compact.
6. It is possible to obtain a motion picture signal which uses a linear sensor.
7. If it is a system which obtains a motion picture by rotating a mirror of polygonal pillar shape, lower power consumption is required as compared to a system which has a linear sensor moved.
8. It is possible to use as a portable type image scanner.
9. An object of shooting for which, amount of light is not adequate can be treated by use of an electro-flash.
10. In case that there occurs shading by use of one electro-flash, it is possible to correct it by sequentially turning on a plurality of electro-flashes.
11. It is possible to record a large amount of image information by use of various recording mediums.
12. By mounting or adding a communication function, it is possible to send image signals which are shot, to reduce a load of a recording medium, and to quickly view an image even in a remote place.

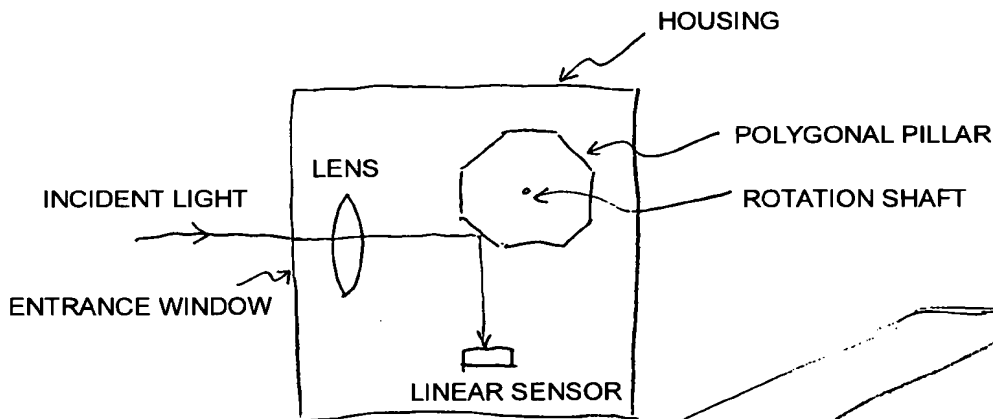
When there is shortage of a page space, please utilize an arbitrary paper such as a report pad etc., and write in detail to the greatest extent possible.

DRAWINGS

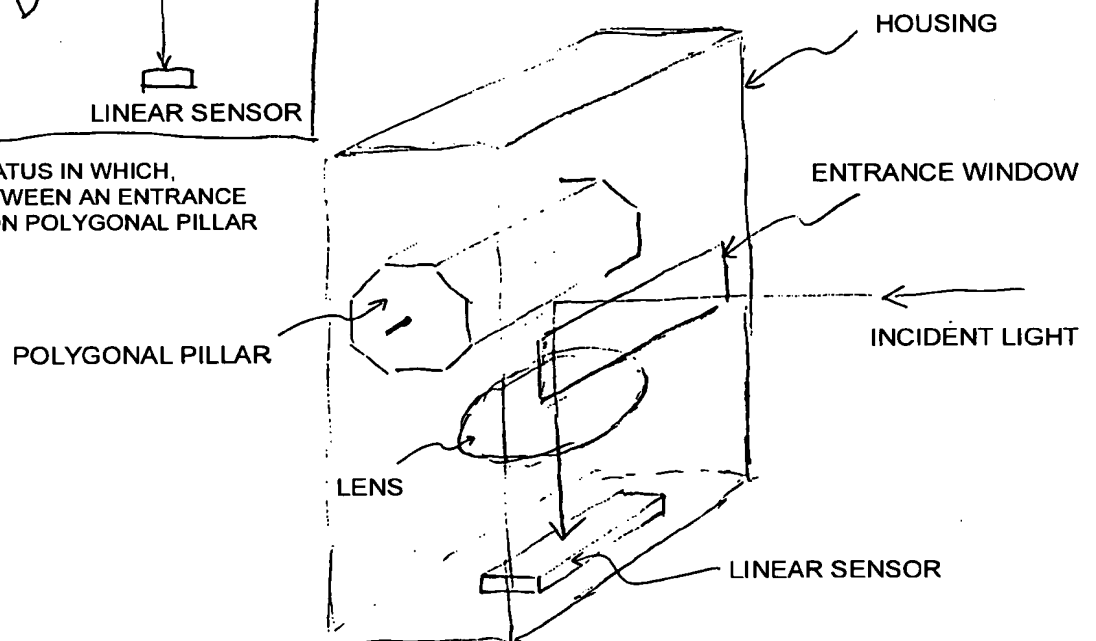
As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.



(a) AN IMAGE INPUT APPARATUS IN WHICH, A LENS IS INSERTED BETWEEN A ROTATION POLYGONAL PILLAR AND A LINEAR SENSOR



(b) AN IMAGE INPUT APPARATUS IN WHICH, A LENS IS INSERTED BETWEEN AN ENTRANCE WINDOW AND A ROTATION POLYGONAL PILLAR

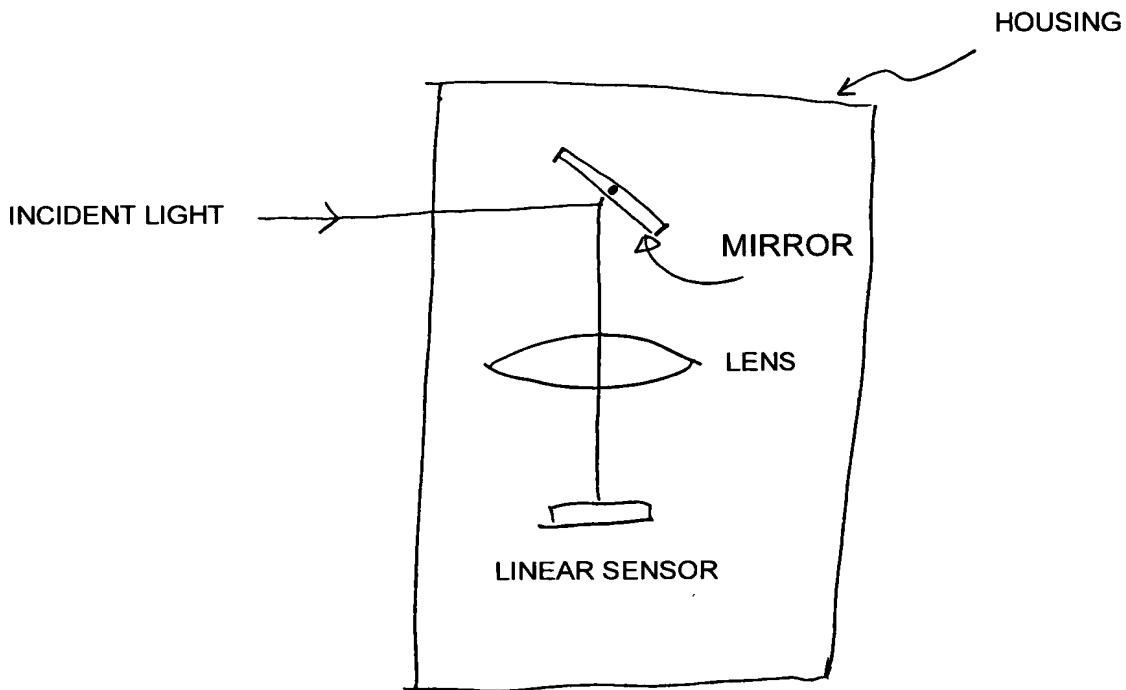


(c) AN ENTIRE VIEW OF AN IMAGE INPUT APPARATUS

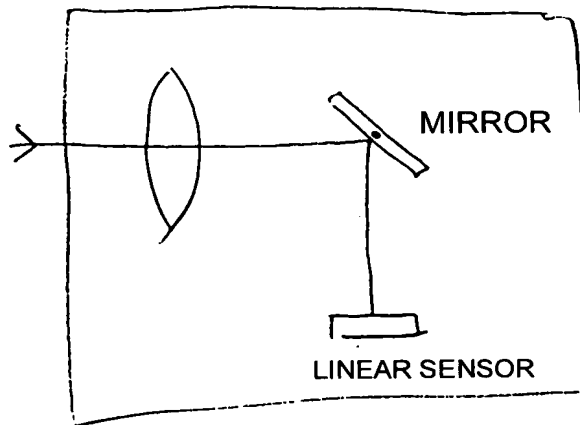
FIG.-1 AN IMAGE INPUT APPARATUS WHICH USES A ROTATION POLYGONAL PILLAR

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.



(a) AN IMAGE INPUT APPARATUS IN WHICH, A LENS IS INSERTED BETWEEN A MIRROR AND A LINEAR SENSOR

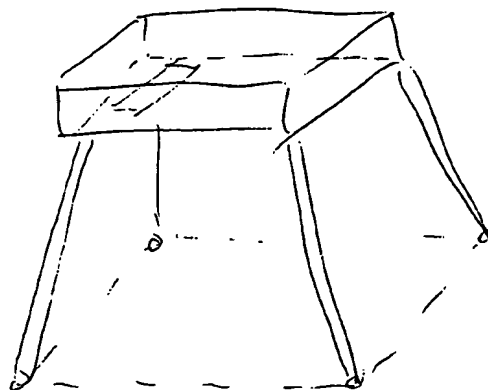
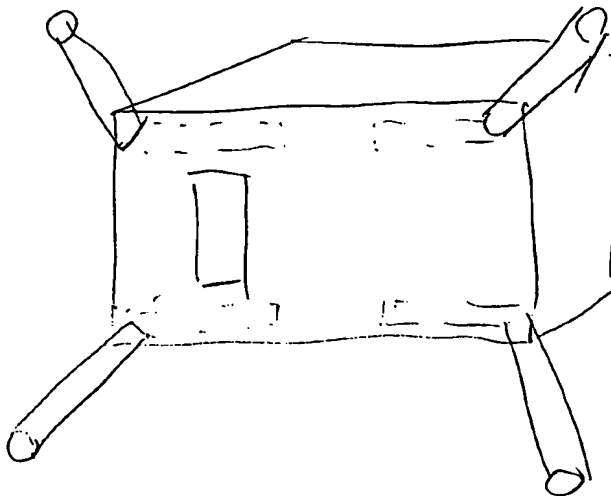
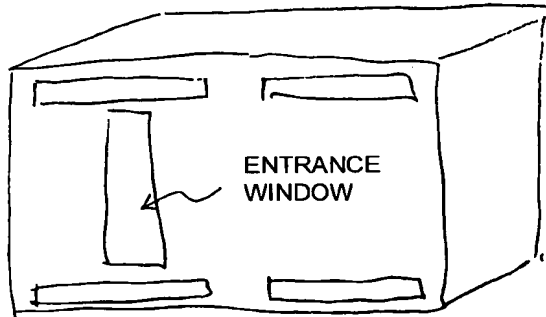


(b) AN IMAGE INPUT APPARATUS IN WHICH, A LENS IS INSERTED BETWEEN AN ENTRANCE WINDOW AND A MIRROR

FIG.-2 AN IMAGE INPUT APPARATUS WHICH USES A MIRROR

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.



A difference of Fig.3 and Fig.4 is of a difference that a tetrapod can be stored in or, is removed from a main body.

Fig.5 shows an image input apparatus which can shoot a three-dimensional space, when the tetrapod of Figs 3, 4 is stored in or removed from the main body.

FIG.3, FIG.4, FIG.5 PORTABLE TYPE IMAGE SCANNER

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.

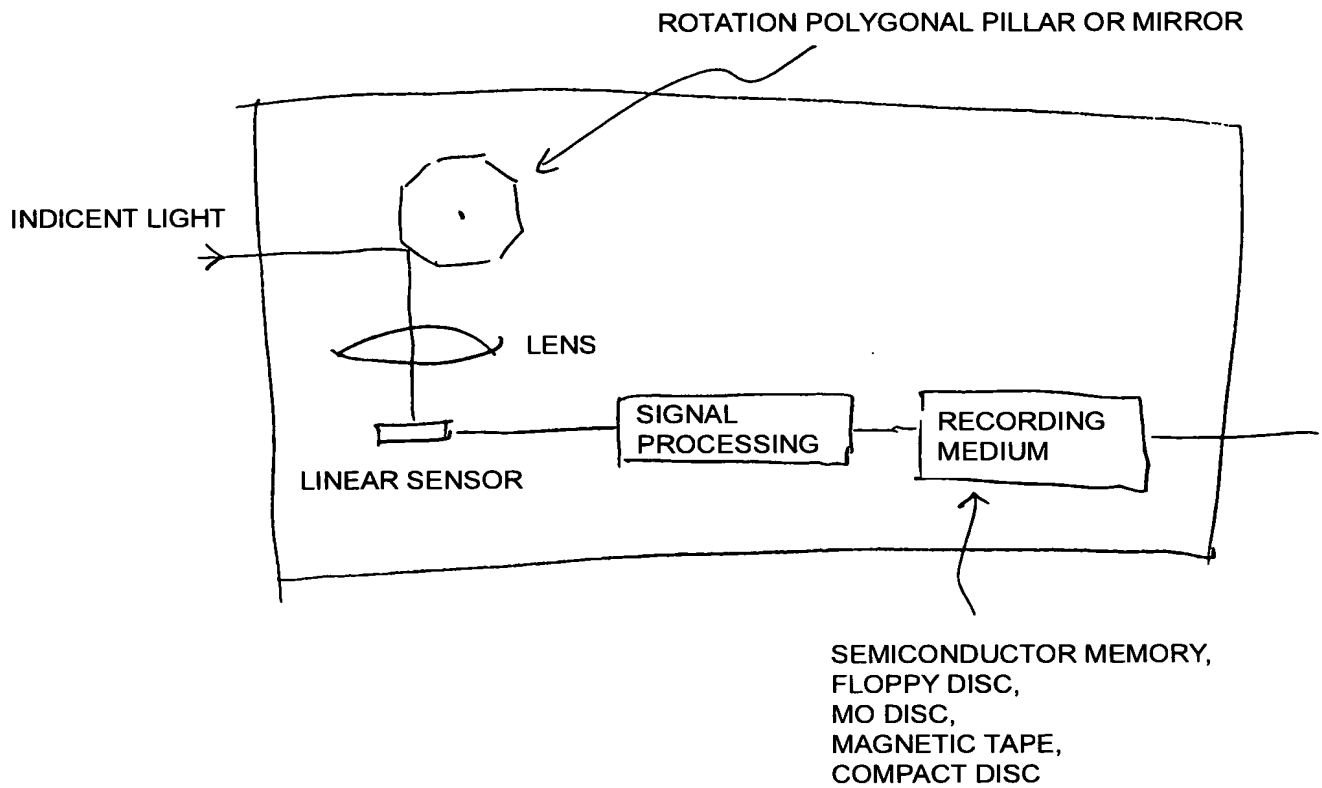


FIG. 6 AN IMAGE INPUT APPARATUS IN WHICH A RECORDING MEDIUM IS LOADED

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.

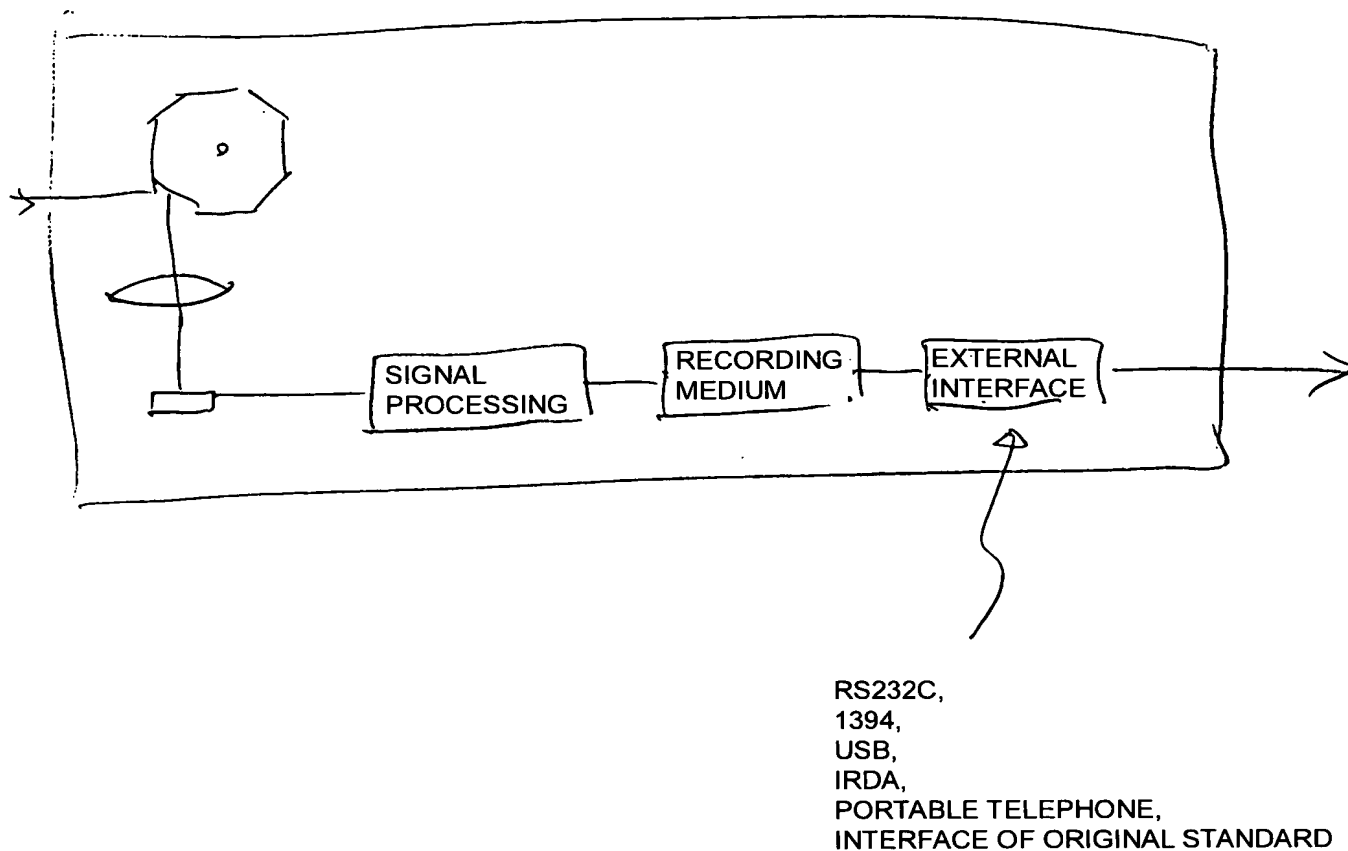
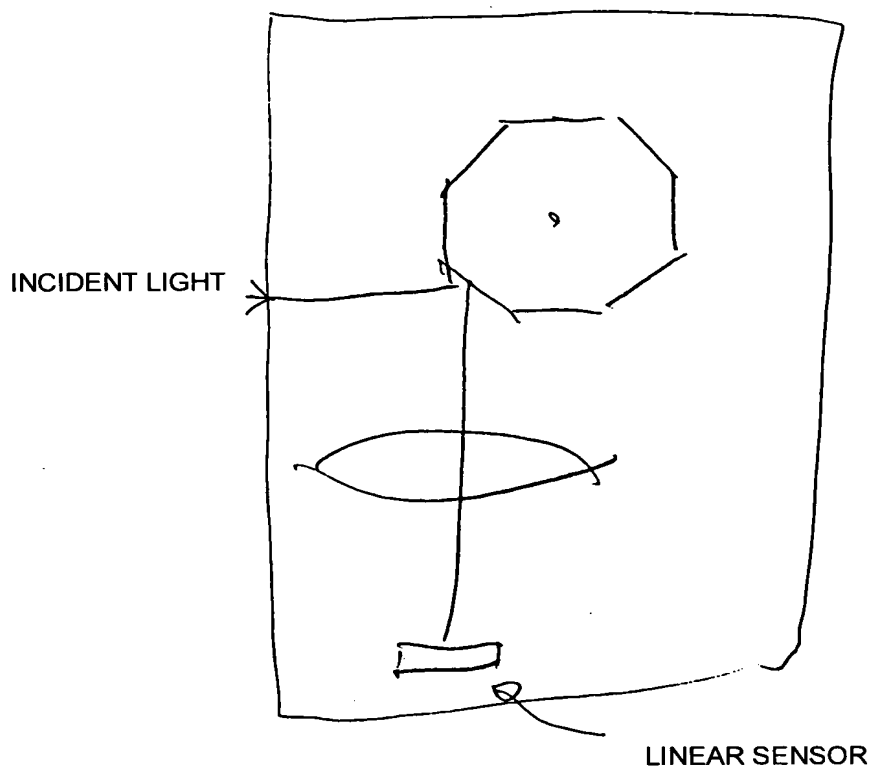


FIG. 7 AN IMAGE INPUT APPARATUS WHICH HAS COMMUNICATION MEANS

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.



CCD, MOS SENSOR
B/W,
COLOR,
3 LINE LINEAR SENSOR,
POINT SEQUENTIAL TYPE COLOR LINEAR SENSOR,
MULTI-LINE LINEAR SENSOR
TDI SYSTEM LINEAR SENSOR

FIG. 8 AN IMAGE INPUT APPARATUS WHICH HAS VARIOUS LINEAR SENSORS

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.

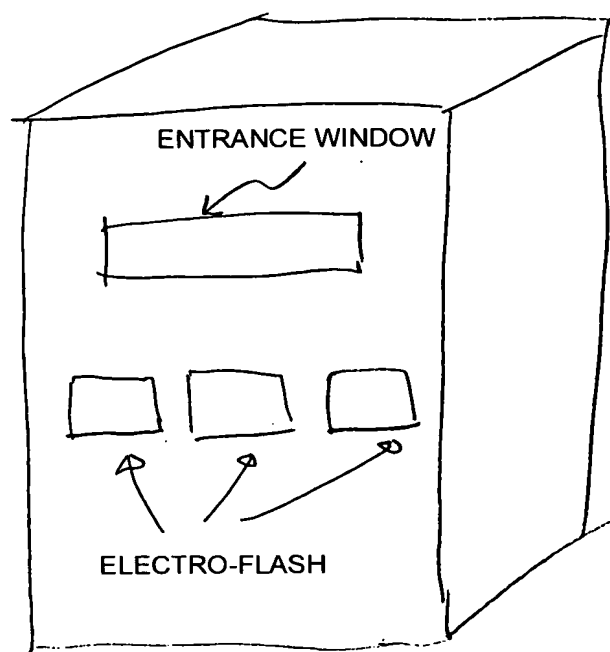
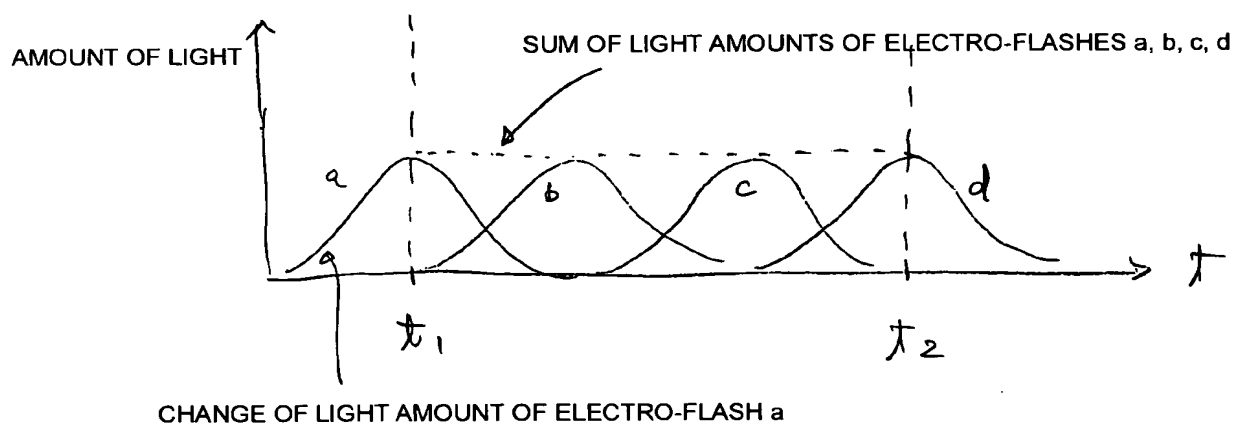
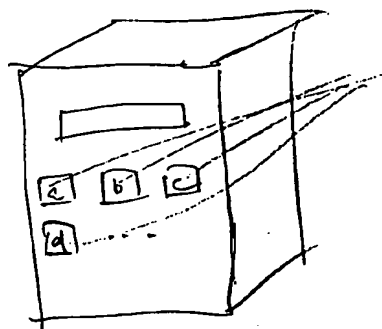


FIG. 9 AN IMAGE INPUT APPARATUS
WHICH HAS AT LEAST ONE OR MORE ELECTRO-FLASH

DRAWINGS

As a general rule, please utilize this drawing sheet. However, if there are existing drawings such as a design drawing, a CAD drawing, a specification and so on, there is no problem to utilize it. Also, there is no problem to use it together with this drawing sheet.



t_1 : FIRST LINE SCAN OF ONE SCREEN

t_2 : LAST LINE SCAN OF ONE SCREEN

FIG.10 AN IMAGE INPUT APPARATUS WHICH HAS UNIFORMITY OF AN IMAGE IMPROVED BY SEQUENTIALLY TURNING ON A PLURALITY OF ELECTRO-FLASHES

発 明 報 告 書 (1)

SONY

発明者の権利はご自身でコピーして保管して下さい。

知的財産部行き

提出日: 1998年2月11日

記入は正確をお願い致します。

1997 年 8 月 改 版

発明の名称: リニアセンサカメラ

発明の概要: (130 字以内にまとめて下さい)

リニアセンサと表面を鏡面仕上げにした多角柱を基本構成材料とし、この多角柱を回転させる事により、2次元画像を電気信号として出力していく装置。

または、リニアセンサと鏡を基本構成材料とし、この鏡を回転させる事により、2次元画像を電気信号として出力していく装置。

S指定(裏面参照)

☐ Yes ☒ NO

知財担当署名

Ref No.

発明者とは発明に実質的に寄与した人を指します。当社従業員以外の人が含まれる場合及び他社との共同出願を行う場合にはその旨を正確に記載して下さい。共同出願の場合には共同出願検討依頼書も必ず添付して下さい。

TEC 開発部名称	カンパニー 所属部署名 (外線電話番号) (内線) (FAX)	従業員番号又は所属会社名(英数字) E-mail アドレス	ローマ字 氏名 (ワープロ又はゴム印を使用して下さい)	作成者 に ○
厚木 TEC	SC・CCD 商品部 (9-421) (5468) (6429)	36082 narabu@saccd.semicon	ローマ字 NARABU TADAKUNI 筆頭 発明者 奈良部忠邦	○
	(-) () ()			
	(-) () ()			
	(-) () ()			

プロジェクト名:

製番:

機種名/開発型名:

ソフトウェア関連発明 ☐ Yes ☒ No

カテゴリ分類(裏面参照)

関連発明報告書・論文

先行技術調査

開発状況

公表予定

☒ アイデア段階
☐ 開発/試作段階
☐ 製品化段階

☐ 有 ☐ 無

予定日

199 年 月 日

展示/発表/発表/出荷

他()

(No.:)
(No.:)
(No.:)
論文名

☐ 調査済 ☒ 未調査
☐ IP-WORLD ☐ SIP調査 ☐ PATOLIS
検索結果(文献名 KW等不足の場合別紙添付)

☐ 添付

上記の項目及び発明内容を確認後、発明の評価及びその根拠等をできるだけ詳しくお書き下さい。

Proj リーダ	統括課長	評価(上司記入)	外国出願希望	意匠出願希望	統括部長	特許代表者	知財推進担当者
	奈良部	<input checked="" type="checkbox"/> 重点処理 (NS) <input type="checkbox"/> 通常処理 (NR) <input type="checkbox"/> 公開特許 (NQ) S指定NOの案件について評価願います。	<input checked="" type="checkbox"/> 有 <input type="checkbox"/> 無 <input type="checkbox"/> 不明	<input type="checkbox"/> 有 <input type="checkbox"/> 無 <input checked="" type="checkbox"/> 不明	鈴木閣	原田	

ご意見 2月15日までの出願を希望します。

記入欄

特許推進計画書PJコード

199 -PJ

知的財産	担当チーム	担当者	最終判定	記 載	発 明	受 付 番 号	受付者
		知財課 98.2.10 荒井	S	1 2 3 4	1 2 3 4	98002353	知財課 98.2.17 執行

知的財産メモ欄

発明のポイント

出願明細書中の **特許請求の範囲** (クレーム)の欄となるところです。発明のポイント (クレーム) が複数有るときには、1、2、3、…の項目を付してその全てをお書き下さい。

1. リニアセンサと表面を鏡面仕上げにした多角柱を基本構成材料とし、この多角柱を回転させる事により、2次元画像を電気信号として出力していく、静止画あるいは動画あるいは両方の画像入力装置。
2. リニアセンサと鏡を基本構成材料とし、この鏡を回転させる事により、2次元画像を電気信号として出力していく、静止画あるいは動画あるいは両方の画像入力装置。
3. 上記の構造のカメラ筐体に伸縮可能な4脚を装備し、原稿や写真などの被写体の情報を電気信号に変換する、いわゆるスキャナの機能を装備し、かつ、携帯が容易な画像入力装置。
4. 上記の構造のカメラ筐体に伸縮可能な4脚を付加し、原稿や写真などの被写体の情報を電気信号に変換する、いわゆるスキャナの機能を装備し、かつ、携帯が容易な画像入力装置。
5. 上記の静止画あるいは動画あるいは両方の画像入力装置と上記の携帯型スキャナの両方の機能を備えた画像入力装置。
6. 上記それぞれの画像入力装置において、電気信号の記録媒体として、半導体メモリ、フロッピーディスク、MOディスク、マグネティックテープ、コンパクトディスクなどを装備した画像入力装置。
7. 上記それぞれの画像入力装置において、電気信号の通信インターフェースとして、RS232C、1394、USB、IRDA、携帯電話機能、あるいは、独自規格の双方向あるいは単方向の通信手段を備えた画像入力装置。
8. 上記それぞれの画像入力装置において、画像入力素子として、CCDセンサ、MOSセンサなど半導体画像入力素子を使用した装置。
9. 上記それぞれの画像入力装置において、エレクトロニックフラッシュなど照明装置を少なくとも1つ以上装備あるいは追加可能とし、光量が不足している被写体環境においても鮮明な画像を入力可能とした装置。
10. 上記のエレクトロニックフラッシュなど照明装置を複数装備あるいは追加可能とした画像入力装置において、目的の画像を入力している間、複数の照明装置を順次点灯させていき、画像の均一性を向上させた装置。

従来技術とその問題点

出願明細書中の **従来技術** の欄となるところです。従来技術とその欠点を特許公報、文献等をできるだけ引用して書いて下さい。

リニアセンサを使用した2次元画像入力装置としては、大きく2種類ある。ひとつは、現在普及の目覚ましいイメージスキャナであり、他方は、中判あるいは大判フィルムを使用する銀塩カメラのフィルム面にリニアセンサを設置し、このリニアセンサを移動させ、2次元画像を得るもの（ここでは“リニアセンサスキャンカメラ”と呼ぶ）である。

何れも、エリアセンサを使用した2次元画像入力装置に比較して、超高解像度の2次元画像を得る事が可能であるが、その一方で、前者のイメージスキャナは、被写体とイメージスキャナとの位置関係がほぼ固定的であり被写体とイメージスキャナとの距離の自由度がなく、また、後者の“リニアセンサスキャンカメラ”は、リニアセンサを移動させるための機械的な精度が厳しくまたリニアセンサを移動させる速度が遅いためコストが高くなる、2次元画像を入力するのに時間がかかるという欠点がある。

従って、何れの方式においても、リニアセンサを使用して、3次元空間を2次元の画像にするには、容易ではない。

更に、リニアセンサを使用して、2次元画像の動画を得るのは、実用上困難であった。

発明の具体的説明

出願明細書中の「実施例」の欄となるところです。以下の手順に従って詳細に説明して下さい。

1. この発明を実現するのに、あなたが最良と信じる実施態様（発明が使用される装置・システム及び要部の全体）を書いて下さい。
2. その発明の要部の構成、動作、作用をできるだけ詳細に書いて下さい。
3. その発明の変形例をできるだけ沢山書いて下さい。

注1：図面、グラフ、フローチャート等は別紙に参照番号を付けて描き、説明はその参照番号を引用しながら書いて下さい。

注2：技術レポート等がある場合には、説明の補充に積極的に利用して下さい。

1. リニアセンサと表面を鏡面仕上げにした多角柱を基本構成材料とし、この多角柱を回転させる事により、2次元画像を電気信号として出力していく、静止画あるいは動画あるいは両方の画像入力装置。
図－1参照。
2. リニアセンサと鏡を基本構成材料とし、この鏡を回転させる事により、2次元画像を電気信号として出力していく、静止画あるいは動画あるいは両方の画像入力装置。
図－2参照。
3. 上記の構造のカメラ筐体に伸縮可能な4脚を装備し、原稿や写真などの被写体の情報を電気信号に変換する、いわゆるスキャナの機能を装備し、かつ、携帯が容易な画像入力装置。
図－3参照。
4. 上記の構造のカメラ筐体に伸縮可能な4脚を付加し、原稿や写真などの被写体の情報を電気信号に変換する、いわゆるスキャナの機能を装備し、かつ、携帯が容易な画像入力装置。
図－4参照。
5. 上記の静止画あるいは動画あるいは両方の画像入力装置と上記の携帯型スキャナの両方の機能を備えた画像入力装置。
図－5参照。
6. 上記それぞれの画像入力装置において、電気信号の記録媒体として、半導体メモリ、フロッピーディスク、MOディスク、マグネティックテープ、コンパクトディスクなどを装備した画像入力装置。
図－6参照。
7. 上記それぞれの画像入力装置において、電気信号の通信インターフェースとして、RS232C、1394、USB、IRDA、携帯電話機能、あるいは、独自規格の双方向あるいは単方向の通信手段を備えた画像入力装置。
図－7参照。
8. 上記それぞれの画像入力装置において、画像入力素子として、CCDセンサ、MOSセンサなど半導体画像入力素子を使用した装置。
白黒センサ、カラーセンサを含む。
白黒センサに外部カラーフィルタでカラー化する方式を含む。
カラーセンサには、3ラインカラーリニアセンサ、点順次型カラーリニアセンサ、マルチラインカラーリニアセンサ、TDI方式リニアセンサ等を含む。
図－8参照。
9. 上記それぞれの画像入力装置において、エレクトロニックフラッシュなど照明装置を少なくとも1つ以上装備あるいは追加可能とし、光量が不足している被写体環境においても鮮明な画像を入力可能とした装置。
図－9参照。

発明の具体的説明 (続)

10. 上記のエレクトロニックフラッシュなど照明装置を複数装備あるいは追加可能とした画像入力装置において、目的の画像を入力している間、複数の照明装置を順次点灯させていき、画像の均一性を向上させた装置。

図-10参照。

11. 光学補正のための回転多角柱の鏡面を平面ではなく曲面状にした多角柱を使用した画像入力装置
12. コスト優先のため回転多角柱の鏡面と平面のままにした多角柱を使用した画像入力装置

発明の効果

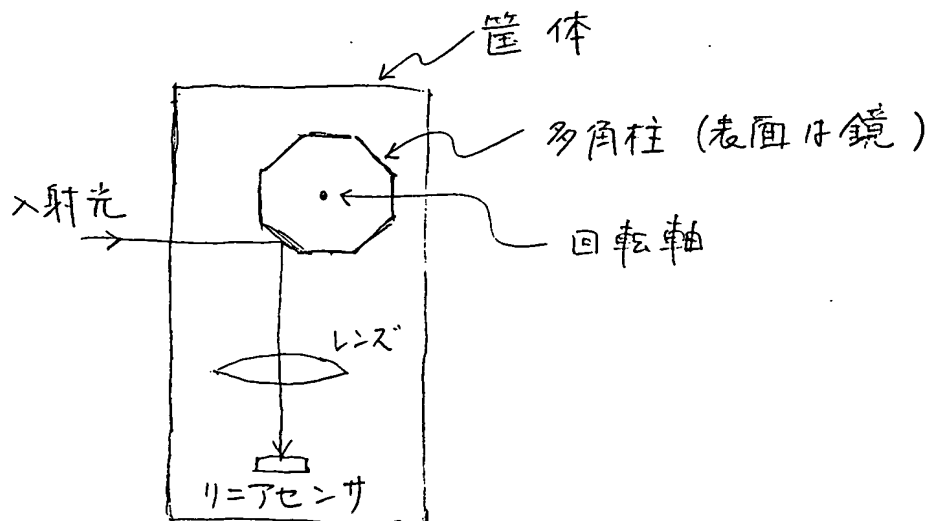
出願明細書中の「発明の効果」の欄となるところです。予測される発明の効果をできるだけ沢山書いて下さい。

1. エリアセンサを使用した2次元画像入力装置（いわゆるデジタルカメラ）より遙かに低コストで同等の画質の2次元画像が得られる。
2. エリアセンサを使用したデジタルカメラと同様のコストで作製すれば、遙かに高解像度の画像を得ることが可能。
3. リニアセンサを使用して2次元画像が従来の“リニアセンサスキャンカメラ”より低コストで得られる。
4. リニアセンサの位置精度が従来方式と比較して緩いもので十分。
5. 画像入力装置の筐体がコンパクトになる。
6. リニアセンサを使用した動画信号も得る事が可能。
7. 多角柱形状の鏡を回転させて動画を得る方式であれば、リニアセンサを動かす方式に比較し低消費電力。
8. 携帯型のイメージスキャナとしても使用可。
9. 光量不足の被写体は、エレクトロフラッシュで対応可。
10. 1個のエレクトロフラッシュでシェーディングが生じる場合は、複数のエレクトロフラッシュを順次点灯させていく事で補正可能。
11. 種々の記録媒体を使用する事で、大量の画像情報も記録可能
12. 通信機能を装備あるいは追加する事により、撮像した画像信号を送信し、記録媒体の負担を少なくするとともに遠隔地においても素早く画像を見る事が可能。

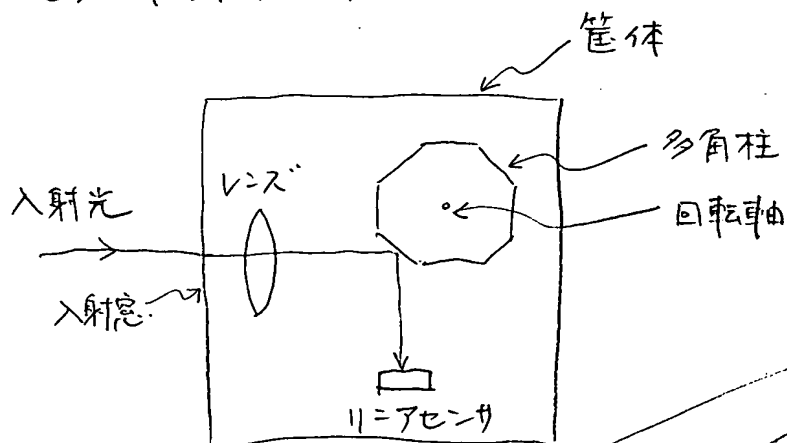
13. 手ぶれ補正のため、光学的あるいは電気的手ぶれ補正を加えた画像入力装置
(もちろん、手ぶれ補正機能がないものも含む)



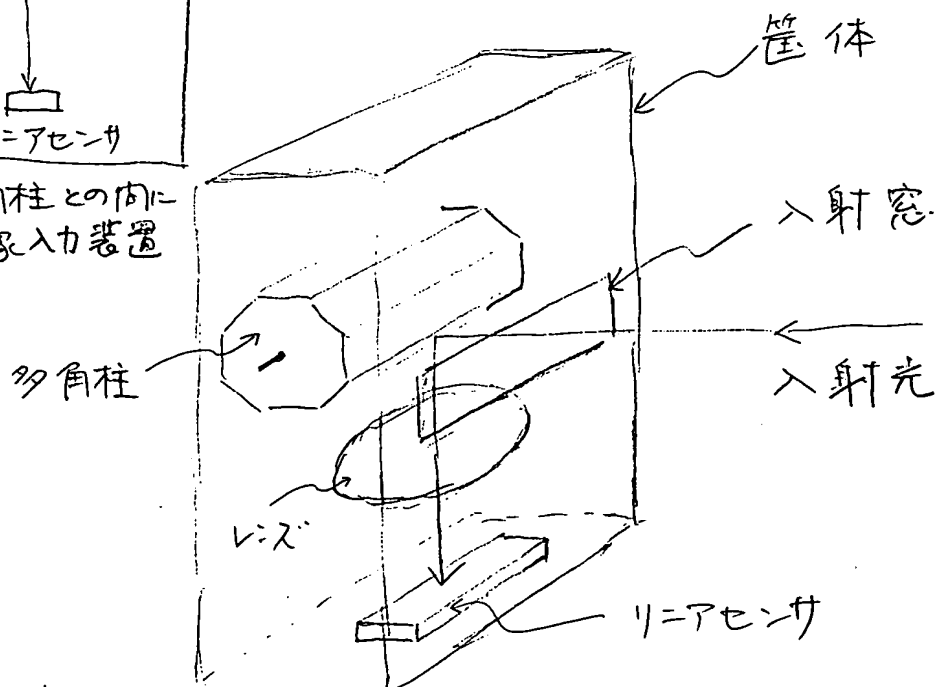
原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。



(a) 回転多角柱とリアセンサの間にレンズを挿入した画像入力装置



(b) 入射窓と回転多角柱との間にレンズを挿入した画像入力装置

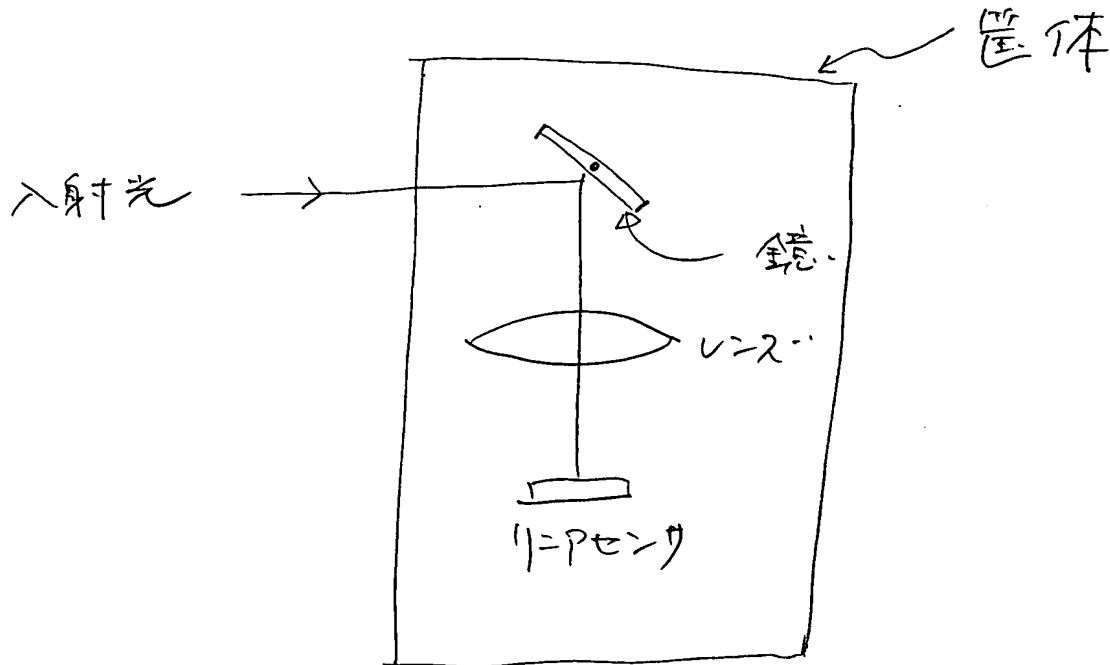


(c) 画像入力装置の全体図

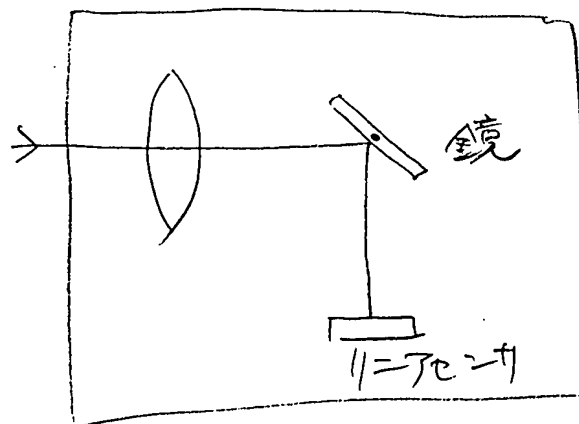
図-1 回転多角柱を使用した画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。



(a) 鏡とリニアセンサの間にレンズを挿入した画像入力装置



(b) 入射窓と鏡との間にレンズを挿入した画像入力装置

図-2 鏡を使用した画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してかまいません。又本図面用紙と併用してもかまいません。

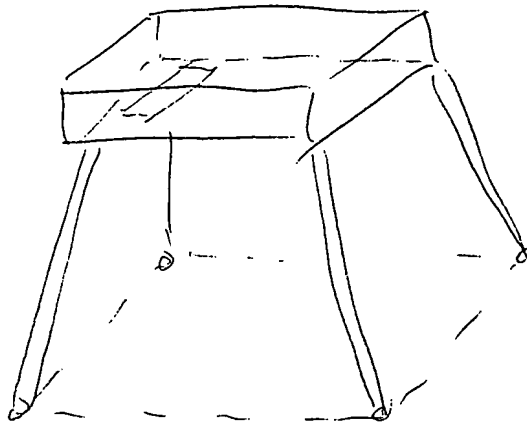
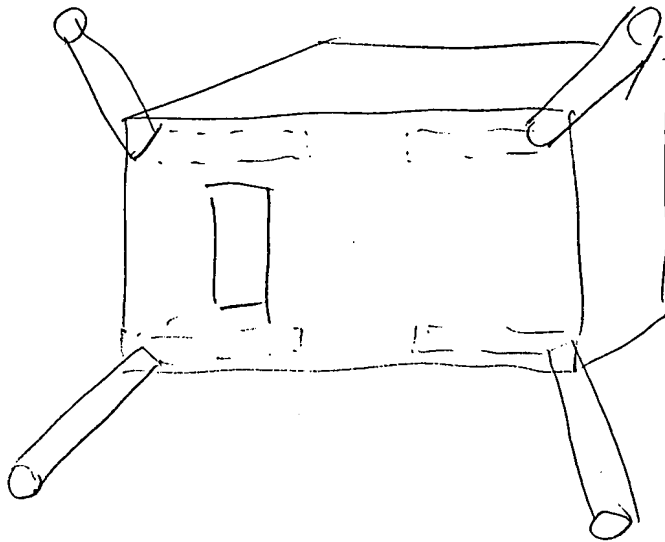
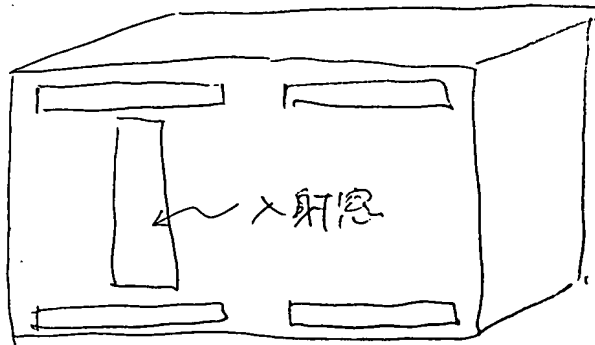


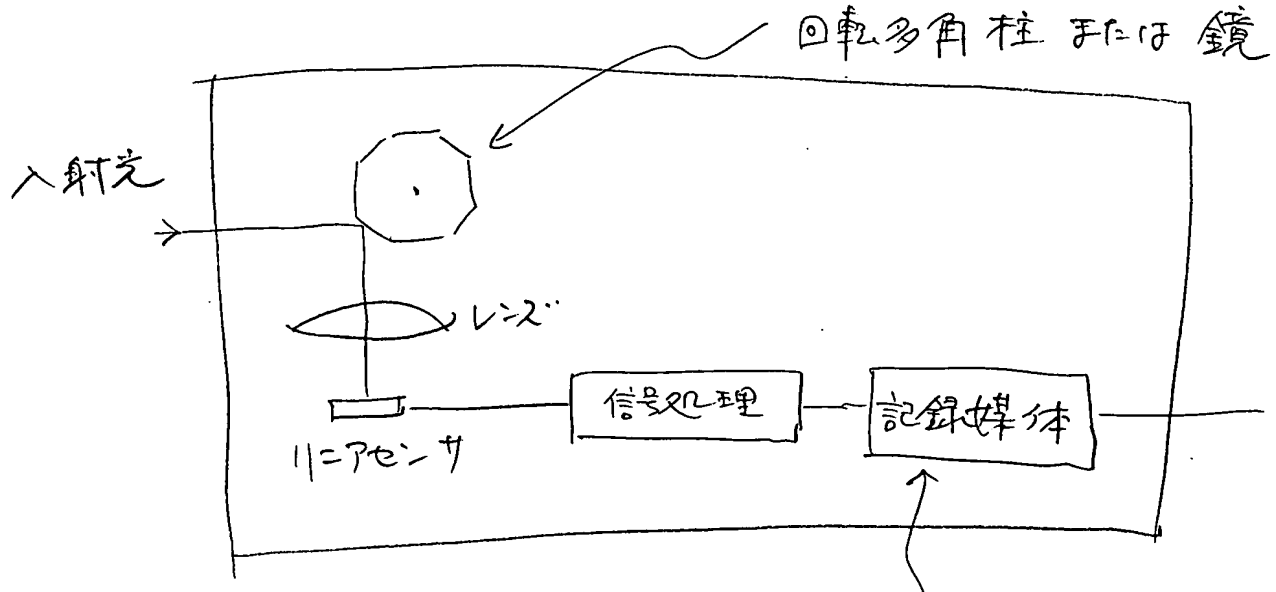
図3と図4の違いは
四脚が本体に収納
できるのか、取りはずす
のかの違い。

図5は、図3、図4の
四脚を本体に収納めるか、取り
はずすと、3次元空間を撮映できる
画像入力装置となるもの

図3、図4、図5携帯型イメージスキャナ



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。

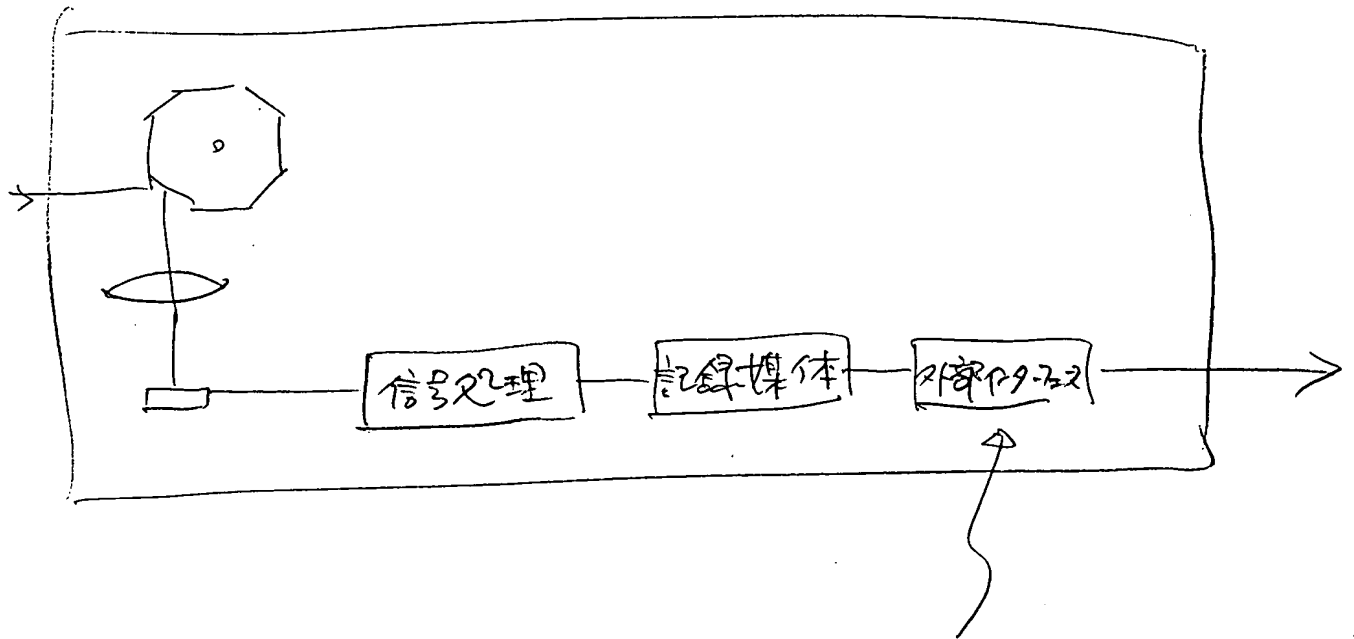


半導体メモリ、
フロッピーディスク、
MOディスク、
マグネティックテープ、
コンパクトディスク

図6. 記録媒体を登録した画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。



RS 232 C、

1394、

USB、

IRDA、

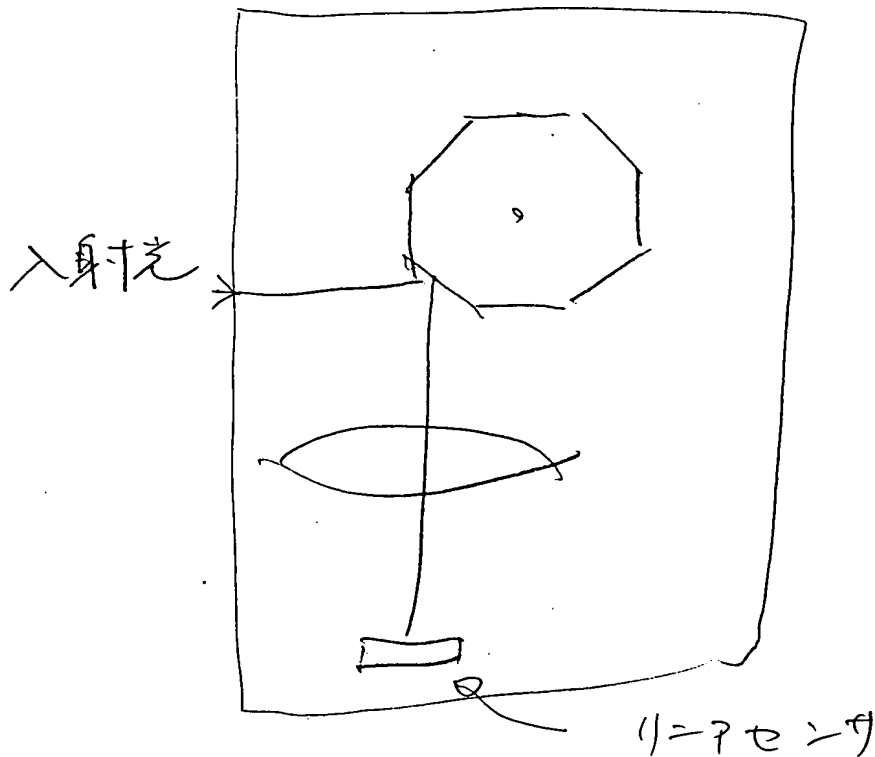
携帯電話

独自規格 インターフェース

図 7. 通信手段を備えた画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。



CCD , MOS センサ

B/W 、

color 、

3ラインリニアセンサ、

点順次型カラーリニアセンサ、

マルチラインリニアセンサ

トウエ方式リニアセンサ

図8. 様々なリニアセンサを使用した画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。

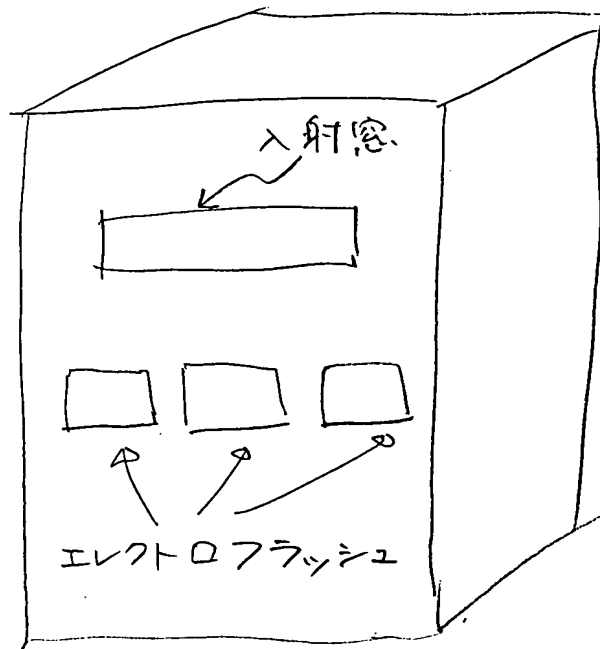
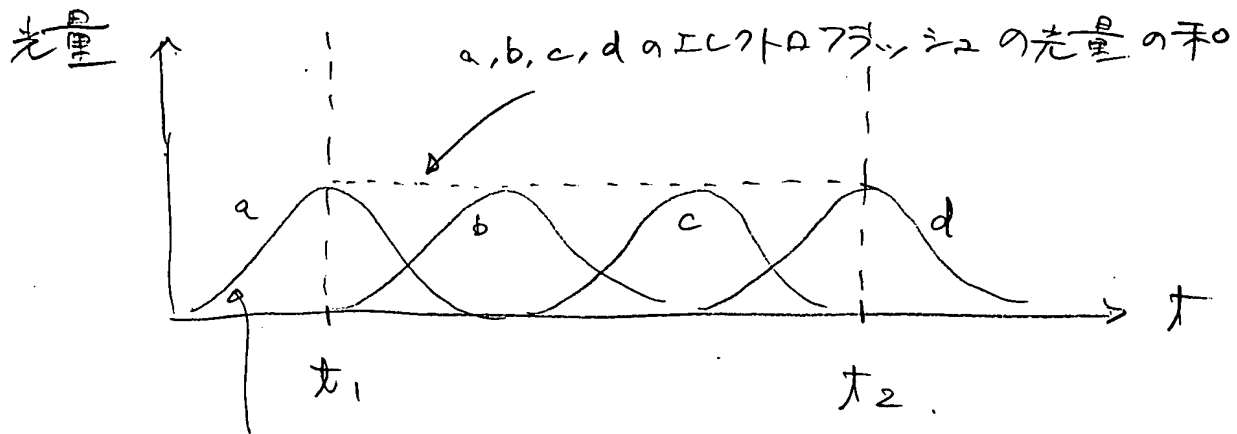
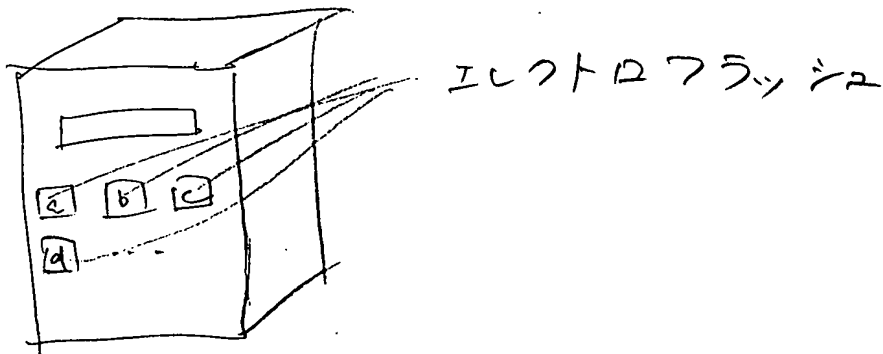


図9. 少なくとも一つ以上のエレクトロフラッシュを
装備した画像入力装置



原則として本図面用紙をご利用下さい。但し、設計図、CAD図、仕様書等の既存図面が有ればそれを利用してもかまいません。又本図面用紙と併用してもかまいません。



a のエレクトロフラッシュの光量変化

t_1 : 1画面の最初のラインスキャン

t_2 : 1画面の最後のラインスキャン

図10 複数のエレクトロフラッシュを順次点灯させ
画像の均一性を向上させた画像入力装置

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